

CLAIMS

What is claimed is:

- 1           1.    A system in a device having at least one application data  
2 destination having a format, comprising:  
3               a difference engine receiving difference information  
4 associated with a change to said at least one application data  
5 destination; and  
6               an application interface, applying said difference information  
7 to said at least one data destination.
- 1           2.    The application of claim 1 wherein said difference engine  
2 comprises:  
3               a data store reflecting application data at a state prior to receipt of  
4 said difference information; and  
5               a delta engine receiving difference information and comparing  
6 difference information to said data store to construct change information.
- 1           3.    The application of claim 2 wherein the difference information  
2 comprises a data file containing change transactions which is combined  
3 with data in the data store.
- 1           4.    The application of claim 2 wherein said application interface  
2 applies said combined data to said application data destination.
- 1           5.    The application of claim 4 wherein said application interface

2 receives change information in a universal data format.

1 6. The application of claim 1 wherein said application interface  
2 comprises an input receiving universal format data from said difference  
3 engine and an output to said application data destination format.

1 7. The application of claim 6 further including a plurality of  
2 application interfaces for a plurality of application data destination formats.

1 8. The application of claim 1 further including a decryption  
2 routine.

1 9. The application of claim 8 wherein the decryption routine  
2 decrypts the difference information prior to input to the difference engine.

1 10. The application of claim 1 further including a compression  
2 routine.

1 11. The application of claim 10 wherein the compression routine  
2 decompresses the difference information prior to input to the difference  
3 engine.

1 12. The application of claim 1 wherein the application interface  
2 includes an extraction interface having an application data destination  
3 format input and a universal data format output, and the differencing engine  
4 includes a universal data input and a difference information output.

1           13.    The application of claim 12 wherein the device is coupled to  
2   a network, difference engine includes a network interface and wherein the  
3   difference engine outputs difference information via said network interface.

1           14.    The application of claim 1 wherein the device is coupled to a  
2   network and difference engine includes a network interface.

1           15.    The application of claim 14 wherein the difference engine  
2   receives said difference information via said network interface.

1           16.    The application of claim 1 further including a versioning  
2   module coupled to the difference engine.

1           17.    The application of claim 16 wherein the versioning module  
2   determines a version of said difference information.

1           18.    The application of claim 1 further including an event trigger.

1           19.    The application of claim 18 wherein the event trigger enables  
2   receipt of said difference information by the application.

1           20.    An application for applying changes to data from a source to

a destination having a destination format, comprising:  
a difference information selection routine; and  
a difference reconstruction routine.

21. The application of claim 20 wherein the difference information selection routine includes:

a data store reflecting the state of the data prior to receipt of said difference information; and

a delta engine receiving difference information and comparing difference information to said data store to construct changed information.

22. The application of claim 21 wherein the difference information comprises a set of transactions which is compared to the data store.

23. The application of claim 21 wherein said difference information reconstruction routine includes a translator receiving changed information in a universal format data from said difference information selection routine and outputting changes to said data in the destination format.

24. The application of claim 23 further including a plurality of application interfaces for a plurality of destination formats.

25. The application of claim 20 further including:  
a construction routine having an extraction interface including an destination format input and a universal data format output, and wherein

4 said difference information selection routine reads said universal data  
5 output to generate change transactions indicating changes to the  
6 destination data.

1 26. The application of claim 25 wherein the device is coupled to  
2 a network, the difference engine includes a network interface and wherein  
3 the difference engine outputs change transactions via said network  
4 interface.

1 27. The application of claim 21 wherein the device is coupled to  
2 a network and difference engine includes a network interface.

1 28. The application of claim 21 wherein the difference information  
2 selection routine receives said difference information via said network  
3 interface.

1 29. A method for updating data files in a system, comprising:  
2 (A) receiving difference information for a subset of said  
3 data files; and  
4 (B) applying said difference information to said subset of  
5 said data files.

1 30. The method of claim 29 wherein said step of receiving  
2 comprises:

3 (i) receiving a change log detailing changes to data files on  
4 another system; and

5 (ii) applying said changes to a data store containing data  
6 identical to said data files to generate changed data.

1 31. The method of claim 30 wherein said step (i) comprises  
2 generating changes to said data in a universal data format.

1 32. The method of claim 31 wherein said step (B) comprises:  
2 converting said changes in said universal data format to an  
3 application specific format; and  
4 updating said data with changes to said data.

1 33. An application in a system having a data source in a source  
2 format, comprising:

3 an application interface extracting data from said data  
4 source; and

5 a difference engine receiving said data and outputting  
6 difference information associated with changes to said data source.

1 34. The application of claim 33 wherein the application interface  
2 includes a source format interface; and

3 a converter to map said data from said source format into a universal  
4 format.

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1           35.   The application of claim 33 wherein said difference engine  
2 comprises:

3           a data store reflecting a prior state of said data; and

4           a delta generator comparing said data and said data store to provide  
5 change transactions.

1           36.   The application of claim 34 wherein said application interface  
2 extracts data from said data source.

1           37.   The application of claim 36 wherein said application interface  
2 converts source data to a universal data format.

1           38.   The application of claim 33 wherein said application interface  
2 includes an input receiving source format data and an output providing  
3 universal format data.

1           39.   The application of claim 35 further including a plurality of  
2 source format interfaces for a plurality of source formats.

1           40.   The application of claim 33 further including a decryption  
2 routine.

1           41.   The application of claim 40 wherein the decryption routine  
2 decrypts the difference information following output from the difference  
3 engine.



1           42.    The application of claim 33 further including a compression  
2 routine.

1           43.    The application of claim 42 wherein the compression routine  
2 decompresses the difference information following output from the  
3 difference engine.

1           44.    The application of claim 33 wherein the application interface  
2 includes an reconstruction interface having a source format output and a  
3 universal data format input, and the differencing engine includes a  
4 universal data output and a source format input.

1           45.    The application of claim 44 wherein the device is coupled to  
2 a network, difference engine includes a network interface and wherein the  
3 difference engine receives difference information via said network interface.

1           46.    The application of claim 33 wherein the device is coupled to  
2 a network and difference engine includes a network interface.

1           47.    The application of claim 46 wherein the difference engine  
2 outputs said difference information via said network interface.

1           48.    The application of claim 33 further including a versioning  
2 module coupled to the difference engine.

1           49.    The application of claim 48 wherein the versioning module

2 determines a version of said difference information.

1 50. The application of claim 33 further including an event trigger.

1 51. The application of claim 50 wherein the event trigger enables  
2 receipt of said difference information by the application.

1 52. An application in a device for distributing changes made to  
2 device data in a system specific format, comprising:

3 a device data extraction routine; and  
4 a change transaction generation routine.

1 53. The application of claim 52 wherein the change transaction  
2 generation routine includes:

3 a data store reflecting the state of the device data prior to generation  
4 of said change transactions; and

5 a delta engine generating change transactions by comparing said  
6 data to said data store to construct change transactions.

1 54. The application of claim 52 wherein said device data  
2 extraction routine includes a translator reading changes to said data in the  
3 system specific format and outputting change information in a universal  
4 data format.

1 55. The application of claim 54 further including a plurality of

2 application interfaces for a plurality of system specific formats.

1 56. The application of claim 52 further including:-

2 a construction routine having an extraction interface including an  
3 system specific format input and a universal data format output, and  
4 wherein said change transaction generation routine reads said universal  
5 data output to generate change transactions for said data.

1 57. The application of claim 56 wherein the device is coupled to  
2 a network, the change log generation routine includes a network interface  
3 and wherein the change log generation routine outputs difference  
4 information via said network interface.

1 58. The application of claim 52 further including:

2 code for applying change transactions to the device data from a  
3 source in the system specific format, comprising:

4 a difference information selection routine;

5 a database reflecting the state of the data at state prior to receipt of  
6 source difference information; and

7 a delta engine receiving source difference information and comparing  
8 difference information to said database to construct change information for  
9 the device data; and

10 a difference reconstruction routine applying the change information  
11 to the device data.

1 59. A method for updating a data source in a system, comprising:

2 extracting difference information from at least a subset of said data  
3 source; and  
4 outputting difference information for at least the subset of said data  
5 source.

1 60. The method of claim 59 wherein said step of outputting  
2 comprises:

3 determining whether changes have been made to the subset of data  
4 source in the system; and

5 generating a change log detailing changes to the subset of data  
6 source on another system.

1 61. The method of claim 59 wherein said step of determining  
2 comprises:

3 comparing data from said subset of data source to a data  
4 store reflecting a previous state of the data source.

1 62. The method of claim 59 wherein said generating step  
2 comprises generating changes to said data in a universal data format.

1 63. The method of claim 62 further including the step of:  
2 receiving change information for said data source;  
3 converting said change information into updated source data; and  
4 updating said source with changes to said updated source data.

1 64. An application in a system containing a plurality of data files,  
2 comprising:

3 an extraction routine for extracting a first set of difference  
4 information resulting from changes to the data files;

5 a differencing transmitter for transmitting said first set of  
6 difference information to an output;

7 a differencing receiver for receiving a second set of difference  
8 information from an input; and

9 a reconstruction routine for applying the second set of  
10 difference information to the data files.

1 65. The application of claim 64 wherein said difference routine  
2 comprises:

3 a data store reflecting the state of the data files at a state prior to  
4 receipt of said difference information; and

5 a delta engine receiving difference information and comparing  
6 difference information to said data store to construct change information.

1 66. The application of claim 64 further including a decryption  
2 routine.

1 67. The application of claim 64 further including a compression  
2 routine.

1 68. The application of claim 64 wherein the system is coupled to  
2 a network, and the first and second set of difference information is received

3 from and output to the network.

1 69. The application of claim 64 further including a versioning  
2 module coupled to the difference engine.

1 70. A method for updating data files in a system, comprising  
2 receiving first change transactions for a subset of said data  
3 files;  
4 applying said change transactions to said subset of said data  
5 files.

6 subsequent to a change in said data files, generating second  
7 change transactions for said files; and  
8 outputting said second change transactions to an output.

1 71. The method of claim 70 wherein said receiving step  
2 comprises parsing a data stream to extract change transactions identified  
3 for the subset of said data files.

1 72. The method of claim 70 wherein said step of applying  
2 comprises comparing said change transactions to a data store including  
3 data in said subset of data files.

1 73. The method of claim 72 wherein said data store includes said  
2 data in a universal data format.

1           74.    The method of claim 70 wherein said step of generating  
2 includes assigning a universal identification to each change transaction.

1           75.    The method of claim 74 further including the step of identifying  
2 each change transaction with a version.

1           76.    A device engine, comprising:  
2                   an application object;  
3                   an application object store; and  
4                   a delta module.

1           77.    The device engine of claim 76 including a plurality of  
2 application objects.

1           78.    The device engine of claim 77 further including a compression  
2 algorithm.

1           79.    The device engine of claim 78 further including an encryption  
2 algorithm.

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